PLATE IV.

Fig. 1. *Cyclops pectinifer*, sp. n. Adult female from above.
" 2. *C. pectinifer*, sp. n. First and second antennæ of female.
" 3. *C. pectinifer*, sp. n. Maxilla.
" 4. *C. pectinifer*, sp. n. Second maxilliped.
" 5. *C. pectinifer*, sp. n. Fifth foot and adjacent border of the body.
" 6. *C. pectinifer*, sp. n. Labrum.
" 7. *C. pectinifer*, sp. n. End of abdomen with caudal rami and furniture.
" 8. *C. viridis*, Fischer. Mandible.
" 9. *C. viridis*, Fischer. Maxilla.
" 10. *C. viridis*, Fischer. Ovisac filled with eggs.
" 11. *C. viridis*, Fischer. Second maxilliped.
" 12. *C. viridis*, Fischer. Abdomen and tail.
" 13. *C. viridis*, Fischer. Fifth foot.
" 14. *C. viridis*, Fischer. First and second antennæ.
" 15. *C. viridis*, Fischer. Labrum.
" 16. *C. viridis*, Fischer. First maxilliped.
" 17. *C. uniangulata*, sp. n. Adult female from above.

METEOROLOGICAL SUMMARY FOR THE YEAR 1882.

PREPARED BY PROF. F. H. SNOW, OF THE UNIVERSITY OF KANSAS, AT LAWRENCE.

The weather of 1882 abounded in superlatives. It had the highest mean temperature, the highest maximum barometer, the smallest and best distributed rainfall, the coolest summer, the warmest autumn, and, with one exception (1877), the warmest winter months upon our 15 years' record. Notwithstanding the extremely small rainfall, crops of all kind were abundant, in most cases surpassing all previous yields. This furnishes further confirmation of the statement of our reports of 1871 and 1875, that a comparatively small amount of rain, well distributed, is more desirable than a larger amount unfavorably distributed.

TEMPERATURE.

Mean temperature of the year, 54.94°, which is 1.51° above the mean of the 14 preceding years. The highest temperature was 105°, on September 12th; the lowest was 6.5° below zero, on the 7th of December, giving a range for the year of 111.5°. Mean at 7 A. M., 49.21°; at 2 P. M., 63.95°; at 9 P. M., 53.30°

Mean temperature of the winter months, 35.19°, which is 5.18° above the average winter temperature, of the spring, 54.67°, which is .72° above the average; of the summer, 72.92°, which is 3.69° below the average; of the autumn, 56.97°, which is 3.81° above the average.

The coldest month of the year was December, with mean temperature

31.25°; the coldest week was January 16th to 22d, mean temperature 25.01°; the coldest day was December 7th, mean temperature 3.2°. The mercury fell below zero only once, on December 7th, not having previously touched zero since February 19th, 1881.

The warmest month was June, with mean temperature 74.14°; the warmest week was June 27th to July 3d, mean 82.83°; the warmest day was June 28th, mean 84.2°; the warmest hour was 2:30 to 3:30 P. M., September 12th, mean 105°. The mercury exceeded 100° on two days—September 12th and 13th—and reached or exceeded 90° on 40 days, viz.: 1 in May, 12 in June, 9 in July, 11 in August, and 7 in September.

The last hoar frost of spring was on May 22d; the first hoar frost of autumn was on October 19th, giving an interval of 150 days, or nearly five months, entirely without frost.

The last severe frost of spring was on March 24th; the first severe frost of autumn was on the 11th of November; giving an interval of 232 days, or nearly eight months, without severe frost. This is the longest period of immunity from severe frost in the past 15 years. No frost during the year caused damage to fruit buds or trees. The hoar frost of May 22d injured strawberries in some localities.

RAIN.

The entire rainfall, including melted snow, was 27.60 inches, which is the smallest annual rainfall on our 15 years' record, and is 7.12 inches below the average. Either rain or snow, or both, fell on 102 days—one less than the average. On 14 of these days the quantity was too small for measurement.

The longest drouth in the 15 years of observation, was from July 30th to September 18th, during which period of 7 weeks less than a tenth of an inch of rain was registered. This drouth was not disastrous, because the staple crops were already well matured before the drouth began.

The number of thunder showers was 26. Hail fell on 7 days.

SNOW.

The entire depth of snow was 18 inches, which is 3.31 inches below the average. Of this amount, 2 inches fell in January, 2 in February, 9 in March, and 5 in December.

Snow fell on 14 days. The last snow of spring was on March 9th; the first snow of autumn was on November 16th.

FACE OF THE SKY.

The average cloudiness of the year was 45.41 per cent., which is 1.08 per cent. above the average. The number of clear days (less than one-third cloudy) was 162; half-clear (from one to two-thirds cloudy), 103; cloudy (more than two-thirds), 100. There were 80 days on which the cloudiness reached or exceeded 80 per cent. There were 53 entirely clear and 47 entirely cloudy days. The clearest month was August, with a mean of 32.37

per cent.; the cloudiest month was December, mean 61.61 per cent. The percentage of cloudiness at 7 A. M. was 50.41; at 2 P. M., 49.82; at 9 P. M., 35.99.

DIRECTION OF THE WIND.

During the year, three observations daily, the wind was from the S. W. 272 times, N. W. 269 times, S. E. 155 times, S. 128 times, N. E. 102 times, N. 72 times, E. 71 times, W. 26 times. The south winds (including southwest, south and southeast) outnumbered the north (including northwest, north and northeast) in the ratio of 555 to 443.

VELOCITY OF THE WIND.

The number of miles traveled by the wind during the year was 137,736, which is 687 miles below the annual average for the 9 preceding years. This gives a mean daily velocity of 377 miles, and a mean hourly velocity of 15.71 miles. The highest hourly velocity was 60 miles, on March 21st; the highest daily velocity was 919 miles, on January 16th; the highest monthly velocity was 16,608 miles, in March. The three windiest months were March, April and May; the three calmest months were July, August, and September. The average velocity at 7 A. M. was 14.51 miles; at 2 P. M., 17.73 miles; at 9 P. M., 15.49 miles.

BAROMETER.

Mean height of barometer column, 29.113 inches, which is with one exception (1874, 29.121 inches) the highest annual mean on our record. Mean at 7 A. M., 29.141 inches; at 2 P. M., 29.085 inches; at 9 P. M., 29.114 inches; maximum, 29.985 inches, on December 17th, which is more than two-tenths of an inch higher than any previous maximum; minimum, 28.349 inches, on March 26th; yearly range, 1.636 inches. The highest monthly mean was 29.200 inches, in January; the lowest was 28.992 inches, in June. The barometer observations are corrected for temperature and instrumental error.

RELATIVE HUMIDITY.

The average atmospheric humidity for the year was 68.63; at 7 A. M., 79.65; at 2 P. M., 50.95; at 9 P. M., 75.31. The dampest month was December, with mean humidity 76.70; the driest month was September, mean humidity, 59.20. There were fourteen fogs during the year. The lowest humidity for any single observation was 7 per cent., on September 12th. This extreme dryness of the air existed during the continuance of the withering "simoon" of that date.

The following tables give the mean temperature, the extremes of temperature, the velocity of the wind, the percentage of cloudiness, the relative humidity, the rainfall (including melted snow), and the depth of snow, for each month of the year 1882, and a comparison with each of the fourteen preceding years:

1882.	Mean temperature.	Max. temperature.	Min. temperature.	Miles of wind.	Relative humidity.	Rain, inches.	Snow, inches.	Mean cloudiness.
January	32.68°	65.0°	5.0°	11,673	66.25	0.70	2.0	51.72
February	41.65	73.0	12.0	11,907	69.70	1.66	2.0	45.59
March	46.90	79.0	17.0	16,608	64.93	1.62	9.0	40.22
April	56.83	88.0	35.0	14,226	61.77	3.20	0.0	51.77
May	60.27	90.0	36.5	13,695	66.40	3.53	0.0	63.44
June	74.14	99.0	44.5	10,874	69.90	4.72	0.0	38.99
July	72.05	99.0	52.0	7,464	75.00	4.03	0.0	38.92
August	72.55	95.0	52.5	7,463	72.40	0.09	0.0	32.37
September	69.30	105.0	46.0	10,026	59.20	1.65	0.0	35.67
October	58.54	84.5	34.0	11,435	69.20	3.08	0.0	41.51
November	43.07	80.0	20.0	11,118	72.00	2.08	0.0	43.11
December	31.25	58.0	*—6.5	11,247	76.70	1.24	5.0	61.61
Means	54.94	84.6	29.0	11,478	68.63	2.30	1.5	45.41

COMPARISON WITH PRECEDING YEARS.

Year.	Mean temperature.	Max. temperature.	Min. temperature.	Miles of wind.	Mean cloudiness.	Relative humidity.	Rain, inches.	Snow, inches.	Rainy days.
1868	53.36°	101.0°	*—16.5°	.....	42.35	.....	37.58	27.50	77
1869	50.99	96.0	— 5.0	.....	49.23	78.2	38.51	18.00	105
1870	54.50	102.0	—10.0	.....	47.88	68.4	31.32	9.50	100
1871	54.30	103.0	— 6.0	.....	47.37	65.9	33.23	29.75	120
1872	51.90	97.0	—18.0	.....	44.33	64.4	32.63	23.25	116
1873	52.71	104.0	—26.0	154,508	42.46	64.0	32.94	26.50	101
1874	54.20	108.0	— 3.0	145,865	45.54	65.7	28.87	43.00	99
1875	50.60	99.0	—16.5	145,316	44.81	66.7	28.87	5.00	106
1876	52.76	98.0	— 5.0	148,120	41.27	66.8	44.18	24.75	102
1877	54.16	99.0	— 9.0	113,967	47.12	72.6	41.09	15.50	126
1878	55.33	98.0	— 6.0	125,793	40.65	70.2	38.39	25.50	107
1879	54.67	99.5	—16.0	124,768	40.01	67.1	32.68	10.35	90
1880	54.01	101.0	—12.0	146,039	40.15	67.9	32.65	7.00	89
1881	54.65	104.0	— 8.0	141,430	47.52	70.1	33.27	32.50	110
1882	54.94	105.0	— 6.5	137,736	45.41	68.6	27.60	18.00	102
Mean of 15 years	53.53	101.0	—12.2	138,377	44.40	68.3	34.25	21.07	103

*The minus sign denotes temperature below zero.